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DEVELOPMENT OF THE PORT OF LAKE CHARLES, LA.

by Elmer E. Shutts, M. ASCE

WATERWAYS DIVISION

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DEVELOPMENT OF THE PORT OF LAKE CHARLES, LA.

Elmer E. Shutts,¹ M, ASCE

FOREWORD

There is nothing of any particular interest to the general public in the development of a small Gulf coast port. What claim, therefore, can Lake Charles put forward or in what way does its development differ? The answer is not apparent to the casual observer and many of the new industries in the Lake Charles area which are so successfully using the facilities of this Port are not aware of the history of this development that makes it outstanding, even among the Ports of the world.

The success of the Port of Lake Charles is directly attributed to the fact that it was done entirely by the people of this community with their own money. The United States government refused to spend any money to make Lake Charles a deep sea port and the railroads had long ago by-passed us in order to make their marine terminal points to the East and to the West. After all possible sources of assistance had been investigated and exhausted, this small community of some 15,000 people, led by a few fearless and foresighted individuals made a momentous decision and pledged themselves and their meager resources and devoted their every energy to build and pay for a port of their own. This was a phenomenal thing for them to do, particularly in this age with its constant trend towards socialism where men lean more and more on the federal government for the things necessary for the modern way of life. This small community did not rest on its oars after it had completed its ship channel and port facilities at a cost of over seven and one-half million dollars. It proceeded with enthusiasm to sell itself on its merits to the world, and as a result of its effort it has in the past two decades, achieved an industrial expansion second to none on the Gulf coast.

The result of this effort is self evident when we tell you that its industrial development has exceeded \$ 550,000,000.00 and that the population of greater Lake Charles is eight times what it was when its ship channel was first developed. Its bank deposits are among the highest per capita in the United States. The water borne tonnage of this port has increased from 45,000 tons in 1926, the year of the opening, to 17,000,000 tons for the year 1952.

GENERAL

The successful development of the great ports of the world during many centuries of civilization has, of course, influenced many large inland cities and numerous small sea coast communities to assume that their success would be assured if they could only achieve a port development for their town or city. In many cases their assumption has been correct; in many others it has been a dismal failure. The mere construction of a port is not in itself the

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answer, nor can the same method of bringing about a development of this kind be applied to all cases - for what may constitute a success in one community would be a failure in some other.

A successful port development must be a proper union of marine and land transportation facilities. Production areas, trade territory, distribution areas and natural resources all enter the picture.

During the great railway expansion era, when the railroad promoters pushed their lines across the continent, from the Atlantic seaboard to the Pacific seaboard, it seemed to be the general assumption that freight and commerce in the United States must flow along East - West lines. During this period, the great Atlantic ports developed and the Pacific ports came into being. New Orleans and Mobile, and possibly Galveston, seem to be the exceptions that prove this rule. The great waterway arteries of the Mississippi River and its tributaries brought about the development of the Port of New Orleans long before the railroad era, and both Mobile and Galveston were well established ports before the railroads were built. Any promoter who considered the construction of a North - South railway terminating at or near the Gulf of Mexico was viewed askance by the old railroad barons and it was largely necessary to secure European capital for their development. It is only in recent years that growers and shippers and manufacturers in the central United States have realized that a quicker, shorter outlet lay to the South along the Gulf coast. Freight rates were established to protect the large Eastern ports against any possible inroads that Southern ports might make in their business. Raw materials were shipped East and Northeast for manufacture largely because of this fact, and of course, because of the lack of industrial development in the South and the impoverished conditions of the area comprising the old Confederacy following the Civil War. The United States Engineers and the Congress did not look with favor upon requests for port development in the South, particularly for small communities along the Gulf coast or immediately inland.

History of Navigation and Development

The early history of navigation on the Calcasieu River is clouded in the fog of romance and piracy. The banks of this River and its tributaries have been honey-combed with pits and borings where enthusiasts have searched for the buried treasures of Jean Lafitte and even prominent citizens will stand for hours watching the discharge of a hydraulic dredge looking for Spanish doubloons and pieces of eight.

The first record of any commercial navigation of any consequence is during the period just following the Civil War. From 1860 to 1900 there grew up along the Calcasieu River a thriving sawmill industry. Dense long leaf pine timber was floated downstream to these mills where it was manufactured and shipped export and coastwise aboard schooners. The situation began to change rapidly during the year 1880 with the construction of the Morgan, Louisiana and Texas Railroad, now the Southern Pacific line, which passed through the little town of Lake Charles or Charles' Lake as it was originally called. Many of these mills were moved up to Lake Charles and there located on the railroad sidings. The Watkins railroad, later part of the Missouri Pacific system, was built in 1887 and the Kansas City Southern railroad was constructed in 1896. With the construction of the three railroads which now serve the Port of Lake Charles, all of the saw mills of any consequence moved to the Port, and at one time some twenty-one mills were engaged in the manufacture of lumber here. The great Long Bell Lumber Company had its beginning at

Lake Charles. Schooner trade serving these mills gradually dwindled and finally stopped completely around 1907.

During the railroad expansion period or between 1880 and 1907, two attempts were made to construct a deep water sea port at or near Lake Charles. The improvement of Calcasieu River and Pass had been discussed and agitated by schooner men and saw mill interest for many years. J. B. Watkins, a promoter who built the Missouri Pacific line from Alexandria to Lake Charles, possessed possibly more vision than judgment. Watkins' original intention was to by-pass the City of Lake Charles and to construct a deep water port at Calcasieu Pass. He expected to improve the Pass for deep sea vessels with a twenty foot draft. His surveys and estimates were completed, but lack of finances caused him to swing his railroad location into Lake Charles and make this his terminal point.

Again just after the turn of the century, the Kansas City Southern railway worked up a plan to construct a twenty foot ship channel from Calcasieu Pass to Lake Charles. They gave serious consideration to the construction of their Southern terminal point at Lake Charles rather than in Southeast Texas. The City was asked to vote an assisting bond issue of approximately \$100,000.00 to help the Kansas City Southern on their project. Opposition developed and Lake Charles rejected the idea. The Kansas City Southern therefore extended their line to Port Arthur and there built their terminal.

The first improvements of Calcasieu Pass were made in the late nineties with the construction of jetties and an attempt to maintain a nine foot depth of water for the schooner trade. Between 1900 and 1921, several efforts were made by Lake Charles to interest the Congress and the United States Engineers in the construction of a ship channel for Lake Charles. Lake Charles was advised, however, that the War Department would not maintain two passes into the Gulf of Mexico as close together as the Calcasieu and the Sabine. In 1921, Lake Charles, after several adverse reports by the War Department, came to the conclusion that the government would not appropriate funds for the construction of a ship channel to Lake Charles and in that same year this small community did a very strange and daring thing. The large resident tax payers got together and agreed to bond themselves and all other tax payers in Calcasieu Parish to raise the funds for the construction of a private ship channel for this community. Heeding the statement of the War Department, and not wishing to burden local tax payers with an annual expense of possibly \$40,000.00 for the maintenance of Calcasieu Pass, they turned West some fifteen miles below Lake Charles at the head of Calcasieu Lake and constructed with their own funds twenty-two and one-half miles of a straight East - West ship channel intersecting the Sabine - Neches waterway just below the City of Orange. It would have been possible, for approximately the same cost, to have constructed this Lake Charles channel to Calcasieu Pass and to have shortened the distance to the open sea by over forty miles. It would, however, have burdened the project and this small community with the maintenance of a separate pass into the Gulf of Mexico. The planning, the engineering, the financing, the construction and the maintenance of this Lake Charles and Calcasieu Parish ship channel by way of the Sabine River were assumed in their entirety by Lake Charles and this Parish. There was no precedent for such a thing, as never in the history of the world had a small community ever assumed such a burden or ever carried such a project to a successful conclusion. The cost of constructing the channel itself, including the servicing of the bonds, amounted in round figures to five million dollars. For over a year after the voting of these ship channel bonds, construction was held up by injunction proceedings filed by one of the heavy non-resident tax payers in this area. Lake Charles had its day in Court

and won the case, and actual construction of the Lake Charles ship channel was started in 1923 and completed in 1926. The bottom width was 125 feet - the side slopes were one on one in marsh areas and two on one through the ridges. The project depth was thirty feet with a two foot overcut.

In order to save the cost of right-of-way, this channel was located on the government owned Intracoastal Canal right-of-way. The channel was completed in the year 1926 and the first ship brought into the Port of Lake Charles was chartered by Kelly-Weber and Company, who brought in a shipload of fertilizer for their Westlake plant. This demonstrated the community ability, not only to build a ship channel but to utilize it for sea borne commerce.

Before the completion of the ship channel, the need for harbor and terminal facilities became apparent. By special Act No. 67 of the Legislature of 1924, confirmed by constitutional amendment, the Port authorities of the Lake Charles Harbor and Terminal District were set up. The Harbor and Terminal District itself comprises the City of Lake Charles and extends in every direction about three miles beyond the city limits. It also includes a strip of land approximately three miles wide centering on the Calcasieu and running South to the South boundary of this Parish.

The business of the Port of Lake Charles is administered by a Board of five men appointed by the Governor. They are authorized to handle the business of the Port, including the calling of bond elections and raising funds for construction, operation and maintenance.

In the year 1925, this Board called for and the people voted a bond issue of one-half million dollars for the construction of port facilities. An extensive engineering study was made of ports along the Gulf coast. This study was later extended to include the Atlantic and Pacific coast ports. In November 1926, the Port opened for business with a creosoted timber wharf 800 feet long and 110 feet wide on which rested two steel sheds 70 feet wide and 300 feet long each.

The railroads were consulted and requested to combine in the construction of a railroad track to serve the terminal. None of the three railroads serving the City of Lake Charles displayed any particular interest in providing a connecting railroad. The Port authorities then built their own railroad consisting of approximately five miles of main line and yards to serve the Port facilities.

The Port of Lake Charles realized that they had made a tremendous investment in the construction of the ship channel and the port facilities and had they rested on their laurels at this point, it is doubtful if you, today, would have invited me to appear before you to present this story. Even before the completion of this construction, every business man in this area began a diligent campaign to secure cargo and shippers to use their investment. Within sixty days after the opening of the Port, our facilities were taxed to the utmost and within five months Lake Charles voted a second bond issue for an additional one-half million dollars to add to the port facilities. Seven hundred fifty feet were added to the length of the first unit and the width of the wharf including the original construction was increased from 110 feet to 180 feet. The covered areas of the transit sheds were increased to 220,000 square feet of floor space. Ship berths were provided for four ships, whereas the original construction accommodated two.

In 1928, the tonnage of the Port had increased to such an extent that the federal government took over the ship channel for maintenance, thus relieving the community of that expense. From 1928 to 1933, the people of Lake Charles pled with the authorities in Washington for a refund to cover the construction costs of the channel. Consistently, the government turned down this request.

In 1931, the Port authorities added a third wharf unit 1600 feet long and 200 feet wide. This was financed by a \$700,000.00 bond issue. Two steel sheds 700 feet long and 160 feet wide were constructed on this wharf. The total transit shed area of all facilities, comprising 440,000 square feet of floor area, has been inadequate since 1938.

Type of Wharf Construction: The type of wharf construction used in the Port of Lake Charles is, in many respects, similar to that used on the Mississippi River by the New Orleans Dock Board. It was decided to use what we call semi-permanent structures. The back portion of these wharf structures consist of concrete floor placed on hydraulically pumped sand fills. The front or ship-side portion is open wharf on creosoted piling in eight by ten foot centers. A thirty-two foot front apron is used on which two marginal or apron tracks are carried. These tracks are very helpful, particularly in handling export lumber which can be loaded directly from car to ship. Two depressed tracks in the rear or on the shore side of the wharf are always used. The width of the transit shed in the first two units was 140 feet. The last unit, however, was increased to 160 feet. Modern methods of handling cargo on pallets with finger lift trucks will, without question, lead to the construction of transit sheds of greater widths. A width of 200 feet will be entirely practicable, whereas, back in 1926, such a width would have been too great for hand trucking. No gantry cranes for loading and unloading ships are used. All cargo is handled with the ship's gear with the possible exception of barges which are unloaded with locomotive cranes on the marginal railroad track.

In adopting this type of construction for port facilities at Lake Charles, the Port authorities have kept in mind the necessity of getting the greatest possible spread of semi-permanent construction with the monies available. They also had to keep down the cost of handling cargo and speed up the time of loading and unloading ships in order to expedite their movement and to keep all charges as low as possible. The Port authorities have adopted and used the type of wharf built parallel with the River bank rather than constructing slips. This is considerably cheaper and the use of tugs for docking is not necessary.

On several occasions the Dock Board has considered expanding their railroad facilities into a public service belt line to serve the entire water front. It has never, however, been the idea to operate such a railroad with their own equipment, as they have felt that all switching should be handled by the railroads themselves.

In the year 1934, the Port authorities came to the conclusion that the government would never refund the money spent by the local people on the original Lake Charles ship channel. In that year began the second and equally important, or perhaps more important, phase of the port development. It was then decided to abandon the refunding idea and to begin a campaign requesting the government to construct a direct channel out of Calcasieu Pass. Please keep these two phases of development clearly in mind. The first was the construction and operation of the Lake Charles ship channel built with local funds and going by way of Sabine Pass. The second phase was the construction of what is known as the direct channel out of Calcasieu Pass.

In the year 1934, a formal request was presented to the War Department through the United States Corps of Engineers for the construction of this second channel. The estimated cost of this project, according to the authorized survey, was \$9,300,000.00, and the request was rejected by the United States Engineer Board until the year 1937. By that year the tonnage of the

Port had increased to such an extent that the Chief of Engineers felt that the saving in money to ships and shippers would be sufficient to amortize an investment of \$ 9,300,000.00 in twenty years time. In 1937, by Act of Congress the construction of the thirty-four mile direct channel from Lake Charles to the Gulf by way of Calcasieu Pass was authorized. Construction started on this project in 1938. The United States Engineers set up this construction project as a five year program and they expected to complete the job by 1943.

In the late fall of 1938, the Engineering Department of the Port authorities made a first hand study of Baltic Ports and was in Poland when Munich was signed. The Port authorities agreed with the Engineering Department that the construction program as set up by the United States Engineers would be stopped by a world conflict before its completion. Every effort, therefore, was made to convince the U. S. Engineers that construction should be stepped up in order to achieve a completion date by 1941.

The Industrial Growth and Port Development: For the purposes of discussion, let us divide ports into three theoretical classifications. First, we have the great commercial ports, such as New Orleans, New York, San Francisco and numerous others which could be mentioned. The success of these ports is, of course, predicated on the amount of foreign and domestic commerce which pass through their portals.

The second type of port, we will call the industrial port. By that I mean such ports as some of the Great Lakes ports and possibly, Port Arthur. These ports have depended for their success upon heavy movement of certain products produced and manufactured by large plants located at these ports. They enjoy very little general cargo or diversified international commerce, as you know it in the City of New Orleans.

Third and last, let us consider combination ports or ports where general cargo, domestic and foreign commerce, and heavy industries are both allowed to develop and expand side by side. Under this classification, we would have such ports as Houston, Corpus Christi, and Lake Charles.

The first important decision facing the port authorities of Lake Charles was that of deciding what course to pursue in this development. They very wisely decided not to exercise any right which they might have over private industry to take over all water front property and to assess a fee against such industry which might locate in the Port of Lake Charles, for handling their product over public facilities. They decided to let industry develop unhampered and to secure and own as a private right, any dock facilities necessary for the handling of manufactured products.

The Dock Board has encouraged in every way possible, the establishment of private industries which use, without cost to them, the ship channel for their specialized needs. Having made the above decision, the Port authorities then proceeded to improve, shorten and enlarge the ship channel to accommodate industrial growth.

Encouragement of the Port authorities given to industrial plants in the construction of private terminals and the lack of any public authority exercised over these terminals, has been the reason for a large expansion program in wharf construction other than the public facilities. At the present time there are twelve other terminals in the limits of the Lake Charles Harbor and Terminal District and several others are now in the planning stage or contemplated by private industry. A list of these terminals are as follows:

- W. T. Burton - Westlake terminal
- Kelly - Weber and Company - fertilizer terminal
- Continental Oil Company - two terminals with an additional one under construction

Mathieson Alkali - caustic soda, soda ash and shell docks
 Southern Alkali - Lockport terminal
 Cities Service Refinery and Cit-Con Refinery - three terminals
 Union Sulphur Company terminal
 Magnolia Petroleum Company docks
 Shell Petroleum Company docks
 W. T. Burton - Moss Lake terminal
 Lake Charles Harbor and Terminal District - Westlake terminal
 Lake Charles Harbor and Terminal District - three Lake Charles terminals

As soon as the end of the construction of the direct channel out of Calcasieu Pass was in sight, Lake Charles began a determined fight to secure heavy industries, particularly those industries which would be of assistance in a possible war effort. Even though determined to secure plants which would be utilized as war plants, the community was careful in asking the National Defense Commission to locate industries which actually belonged in this community and which depended on raw materials available in this locality for their operation. The chemical industry had already entered the field of production at the Port of Lake Charles with the construction of the Mathieson Alkali plant in 1933, therefore, it was natural for us to ask for and to secure petroleum plants and petroleum chemical plants. Lake Charles was successful in its request and during the war period a total of approximately \$225,000,000.00 worth of industrial war plants were built here. The following were built by private industry, private capital: - The Defense Plant Corporation, the Rubber Reserve Corporation and the Reconstruction Finance Corporation.

Cities Service - high octane refinery
 Defense Plant Corporation - Butadiene Plant
 Firestone Tire and Rubber Co. - synthetic rubber plant
 Defense Plant Corporation - Ammonia plant and oxidation unit
 Defense Plant Corporation - Magnesium plant

Every war plant built at Lake Charles is still in operation as originally planned or operating after conversion. Cities Service have increased their production to over 150,000 barrels per day. The Butadiene Plant is in full production. Firestone Tire and Rubber Company have increased their capacity. The ammonia plant and the oxidation unit have been converted to the manufacture of fertilizer. The magnesium plant was taken over and converted by the Southern Alkali Corporation, now the Columbia-Southern Chemical Corporation. The Cit-Con Oil Corporation have built one of the largest lubricating refineries in the world here. The Continental Oil Company have more than doubled the capacity of their high octane gasoline refinery. Carbon black plants have been added and the Davison Chemical Company recently constructed a large chemical plant at Lake Charles. Olin Mathieson own and operate a hydrozine plant manufacturing propellants. The total combined value of all plants on the Lake Charles ship channel is approximately \$550,000,000.00

In January 1954 the Port Authorities of Lake Charles made preliminary plans and studies for the construction of a 1 - 1/2 million dollar bulk handling terminal on the Calcasieu River at Westlake, Louisiana. This plant will handle the unloading, the storing, and the grinding of Florida phosphate rock, and the unloading, storage, and grinding of barium sulphate from Nova Scotia and Yugoslavia. Plans were completed, and construction started on this plant the 1st of April, 1954.

This plant consists of a ship unloading and a barge unloading terminal, two separate conveyor systems, eight concrete silos 30' in diameter by 70' high capable of storing 16,000 tons of phosphate rock before grinding. Provisions were made for the storage of 60,000 tons of barium sulphate, one hammer mill has been installed and two 73" roller mills for grinding phosphate and for drying and grinding barium sulphate. The plant will be in operation by the 1st of January 1955. In April of 1954 a \$6,000,000.00 bond issue was voted by the tax payers for the construction of new terminals.

In addition to the Westlake Terminal the Dock Board is planning the construction of approximately \$4,000,000.00 worth of other bulk handling facilities, both liquid and solid, construction of at least one additional wharf, and a large transit shed and a number of steel and concrete warehouses, as well as a small tank farm for the handling of liquid cargoes. In addition to the above the installation of a large barge terminal including shore warehouses is contemplated.

One of the most important factors in the industrial development of the Port of Lake Charles has been the almost inexhaustable supply of cheap natural gas. Steam and electricity have in the past been generated here as cheaply as could be done anywhere in the world and at one time almost any quantity of natural gas could have been had here for less than one cent per thousand cubic feet. This area is rich in natural resources commonly used by the chemical and petroleum industries. Oil, natural gas, shell, salt, sulphur and turpentine products all abound in vast quantities in Southwest Louisiana.

The pastoral French people of this area have developed into an excellent class of industrial workers and have to some extent displaced the negro labor on which the South used to depend. Most of the refinery and chemical plants in both Southeast Texas and Southwest Louisiana are largely operated by the descendants of the French people of Southern and Southwest Louisiana.

Attached to this paper and made a part hereof are the following sketches.

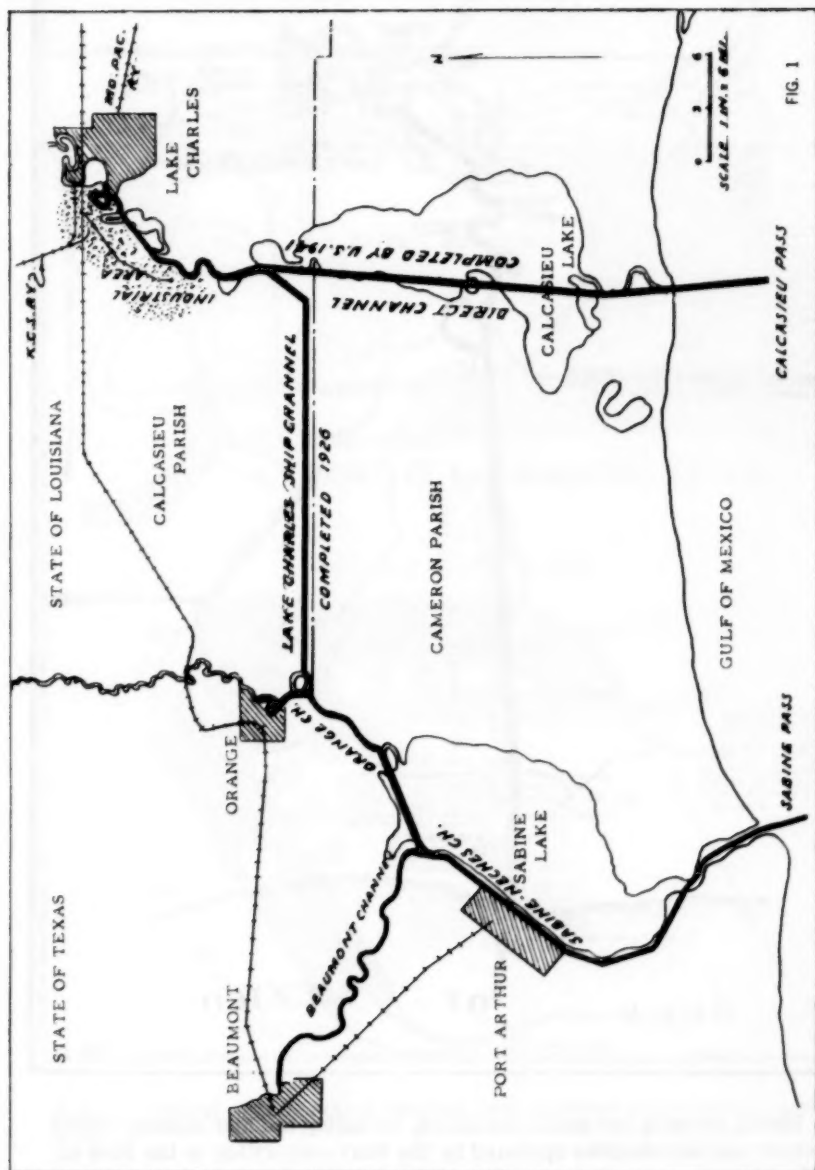


Fig. 1. Map of Southwest Louisiana showing the location of the original Lake Charles channel by way of Sabine Pass and the newer direct channel out of Calcasieu Pass.

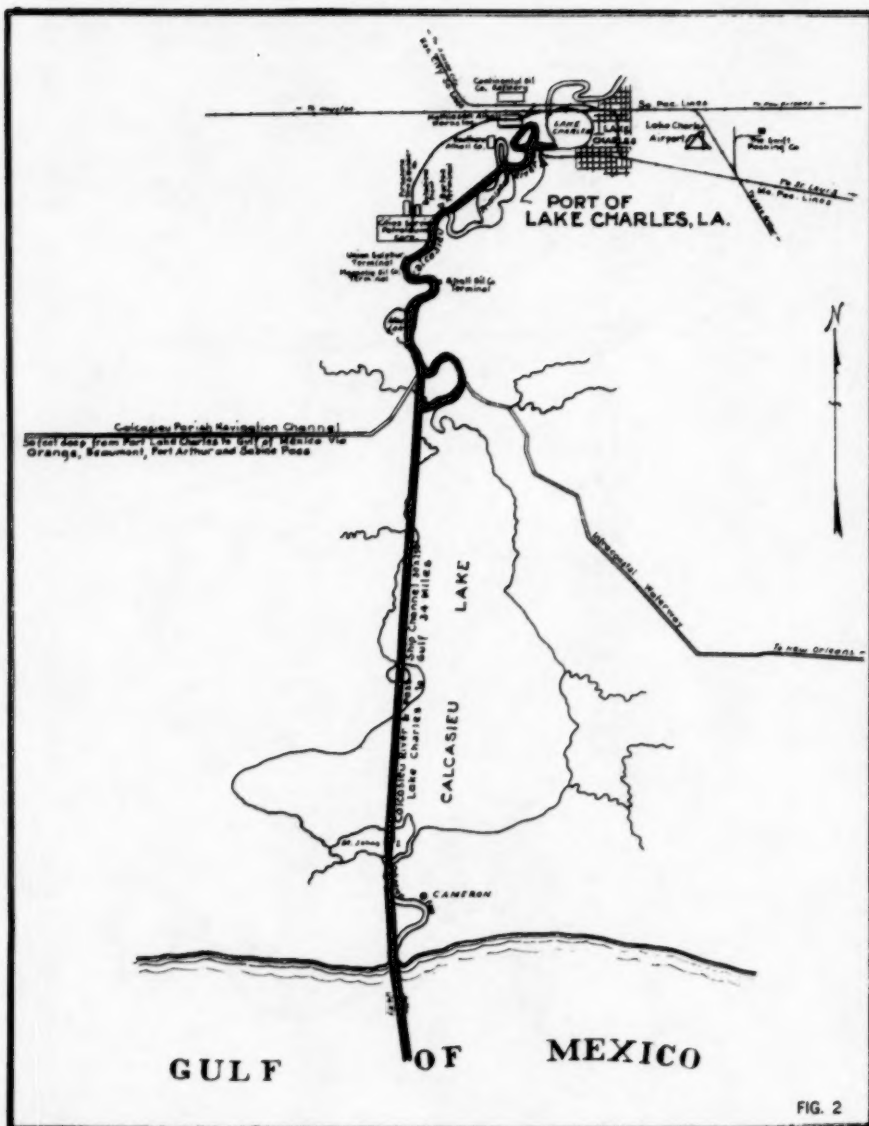


FIG. 2

Fig. 2. Sketch showing the public facilities, including the high density cotton compressor and warehouses operated by the Port authorities of the Port of Lake Charles.

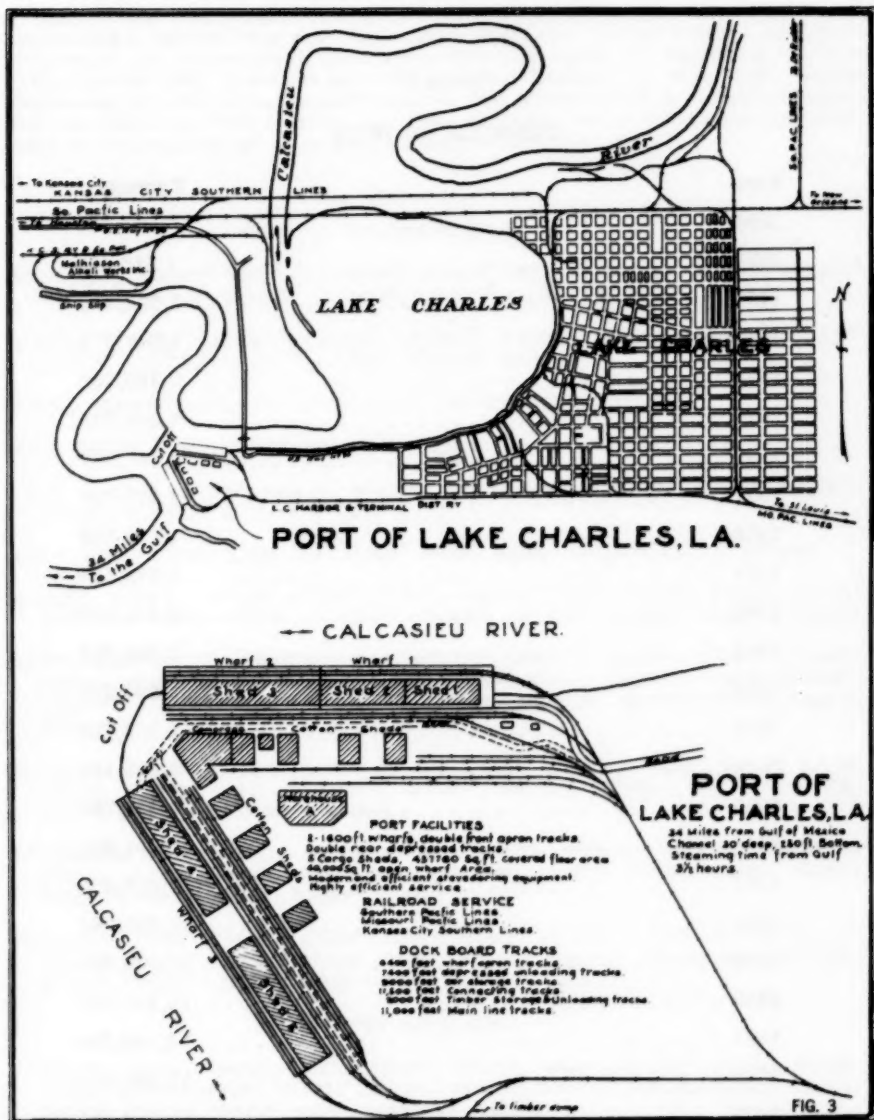


Fig. 3. Typical cross section showing type of wharf construction used at the Port.

Table 1
TONNAGE GROWTH

Year	Tonnage
1926	45,000
1931	1,216,000
1932	1,282,355
1933	1,647,374
1934	2,103,728
1935	3,348,729
1936	4,147,697
1937	4,573,727
1938	4,516,538
1939	4,572,163
1940	4,244,272
1941	4,580,081
1942	3,294,826
1943	2,903,303
1944	5,683,134
1945	8,002,738
1946	10,051,991
1947	11,051,854
1948	12,880,968
1949	13,306,839
1950	15,286,807
1951	14,000,000
1952	16,900,747
1953	15,950,421

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DECEMBER: 558(ST), 559(ST), 560(ST), 561(ST), 562(ST), 563(ST)^c, 564(HY), 565(HY), 566(HY), 567(HY), 568(HY)^c, 569(SM), 570(SM), 571(SM), 572(SM)^c, 573(SM)^c, 574(SU), 575(SU), 576(SU), 577(SU), 578(HY), 579(ST), 580(SU), 581(SU), 582(Index).

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c. Discussion of several papers, grouped by Divisions.

d. Presented at the Atlanta (Ga.) Convention of the Society in February, 1954.

e. Presented at the Atlantic City (N.J.) Convention in June, 1954.

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